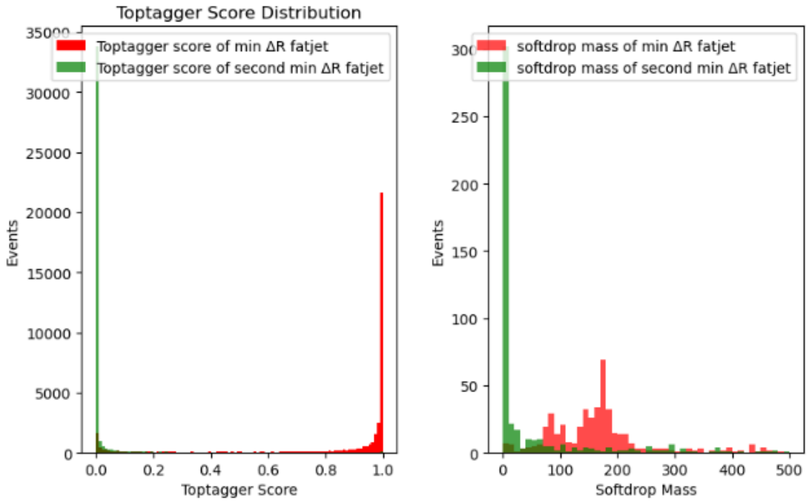
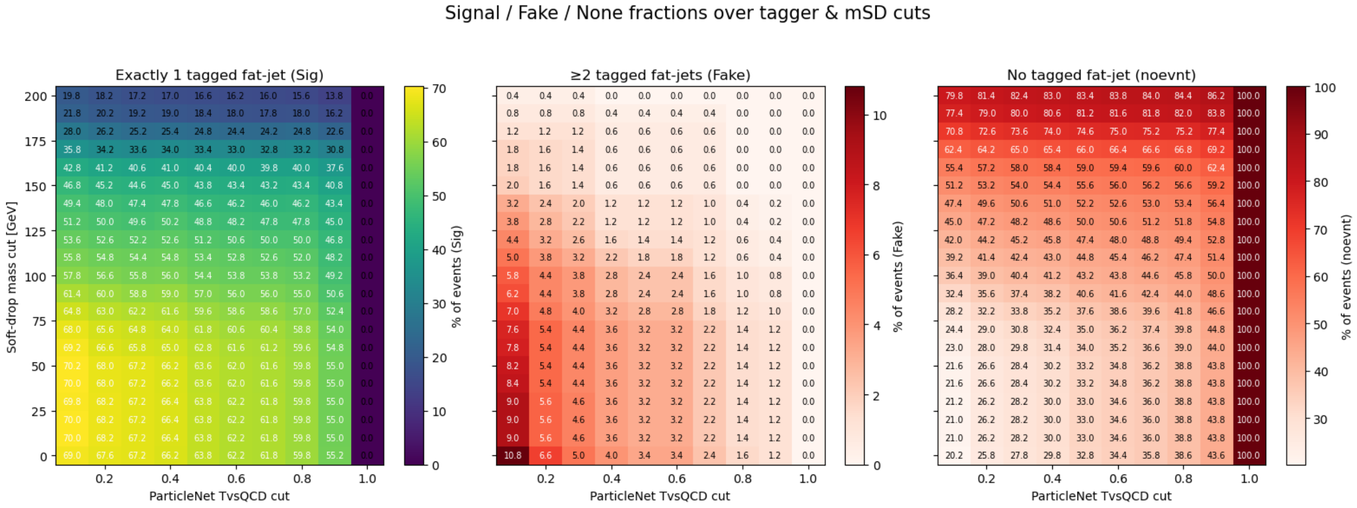
W_R mass reco adjusting cleaning

Review of last meeting



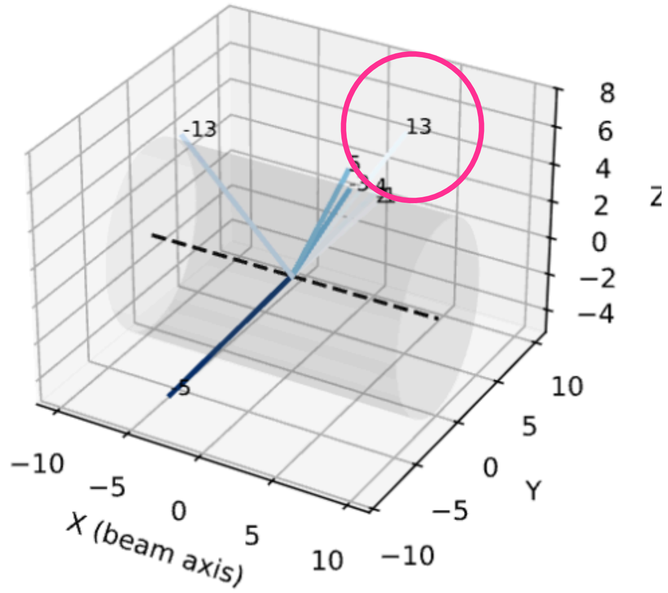


Top tagging well matched ,

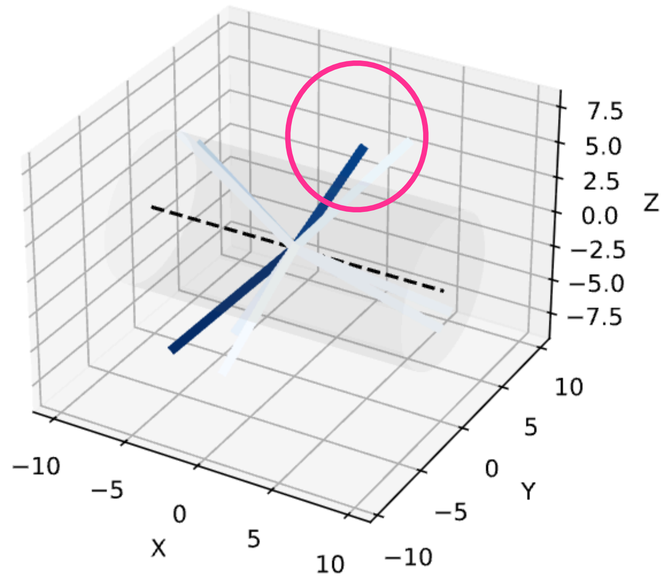
tagging efficiency defined

Cleaning Adjusting

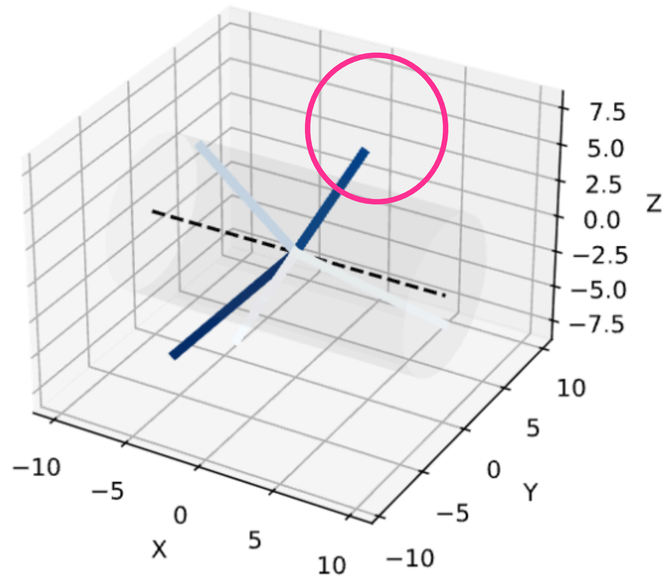
For selecting objects , object could be overlapped (muon -> reconstructed as muon, AK4jet , AK8jet)



LHE particle



AK4 jets

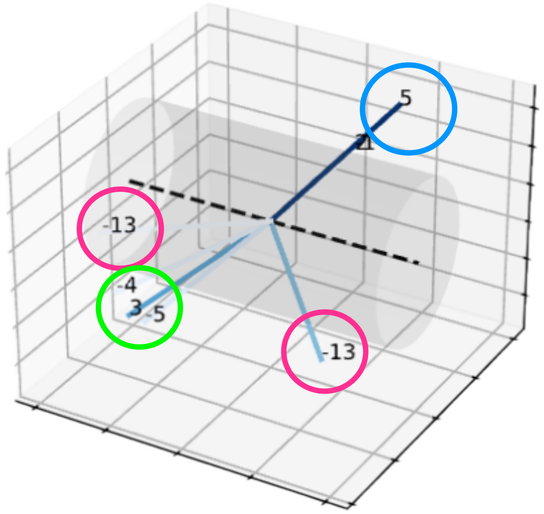


AK8 jets

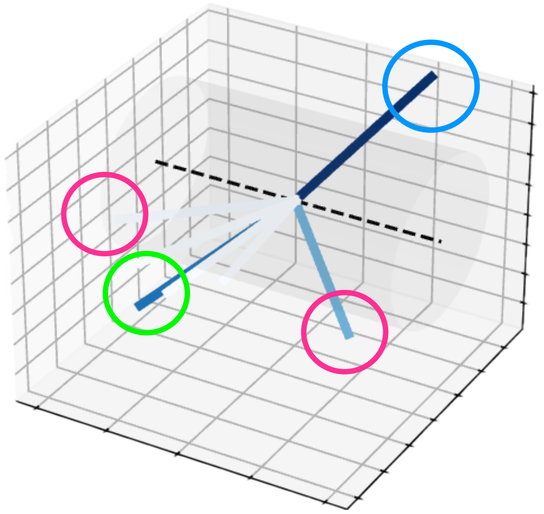
* Dark color stands for high p_t

Cleaning Adjusting

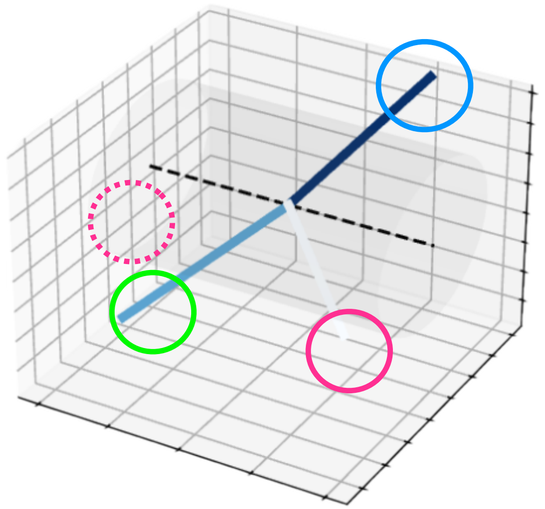
Strategy 1 for cleaning



LHE particle



AK4 jets



AK8 jets

1. 2 leading lepton
2. AK8 with top tagged
3. AK4 with leading p_t

Cleaning Adjusting

Strategy 1 for cleaning

2 leading lepton : no cut

(no overlap with 2 leptons each)

AK8 with top tagged : top tagging score > 0.9

120 <soft drop mass < 250

[FatJet_particleNetWithMass_TvsQCD]

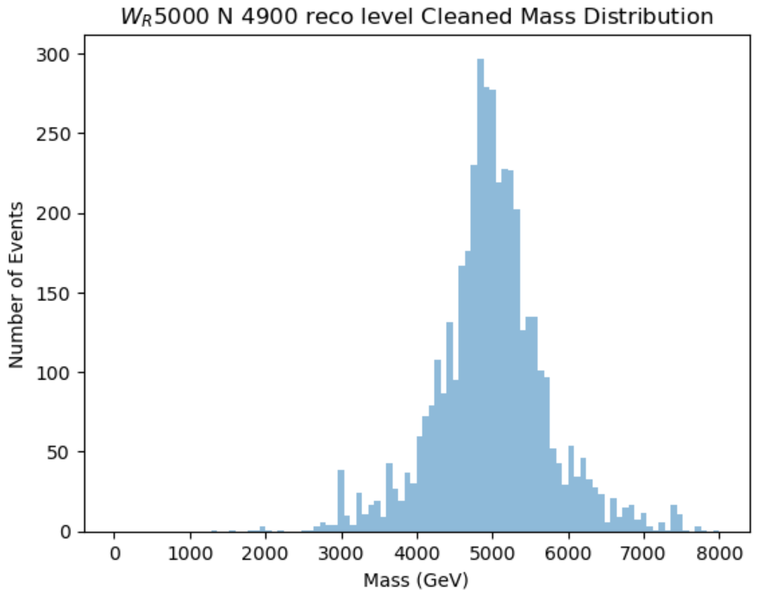
[FatJet_msoftdrop]

(no overlap with 2 leptons , AK8)

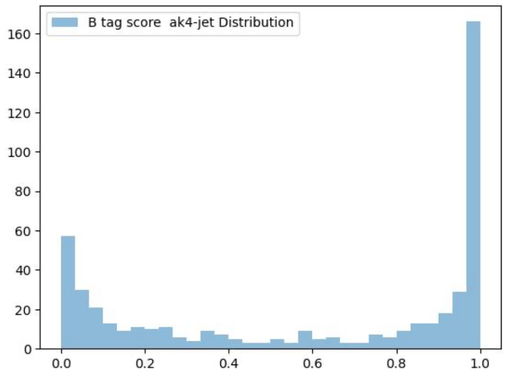
AK4 with leading p_t : b tagging score > 0.5

[Jet_btagDeepFlavB]

(no overlap with top tagged AK8 , AK4, 2 leptons)

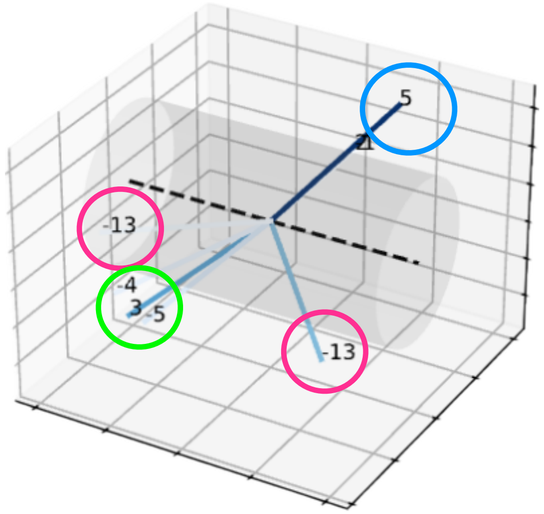


* 40,000 events , 10.82% efficiency

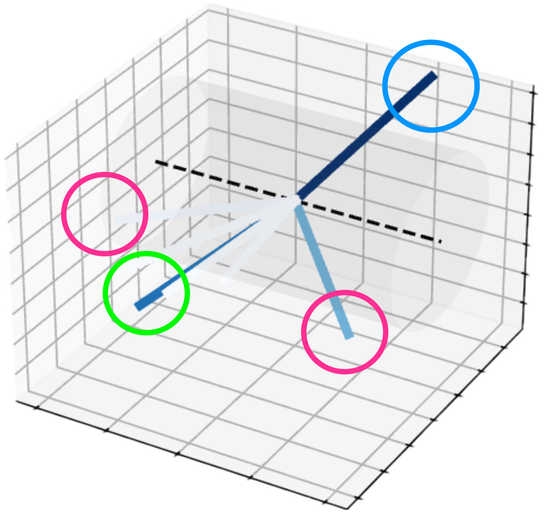


Cleaning Adjusting

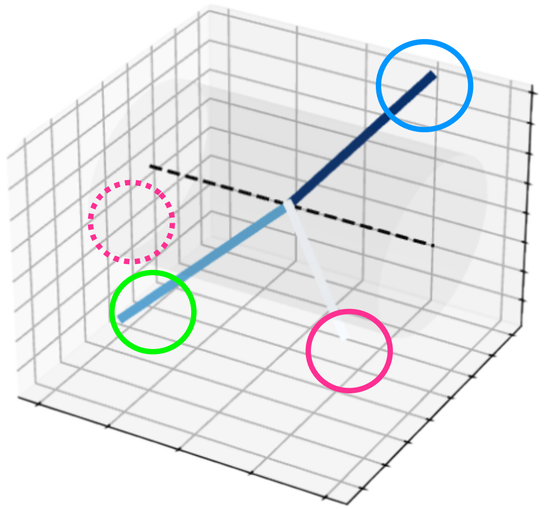
Strategy 2 for cleaning



LHE particle



AK4 jets



AK8 jets

1. 2 leading lepton
2. AK8 with top tagged
3. AK8 with leading p_t

Cleaning Adjusting

Strategy 2 for cleaning

2 leading lepton : no cut

(no overlap with 2 leptons each)

AK8 with top tagged : top tagging score > 0.9

120 <soft drop mass < 250

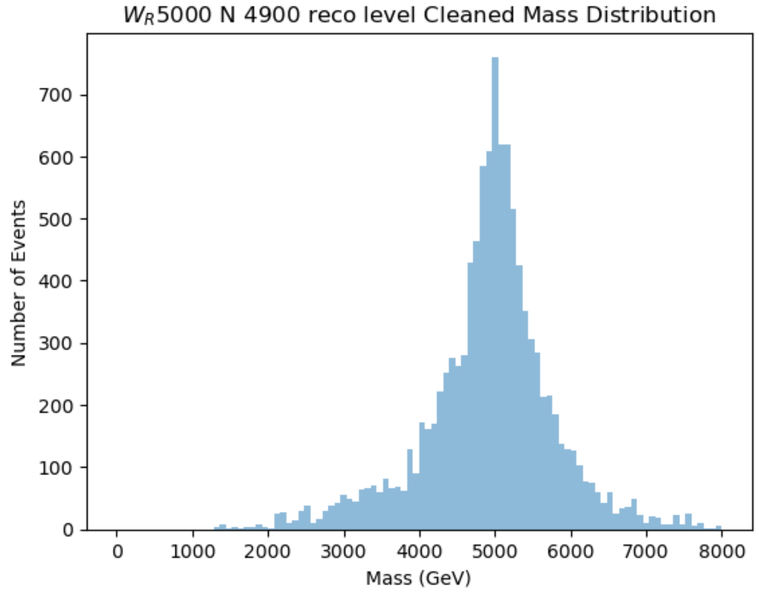
[FatJet_particleNetWithMass_TvsQCD]

[FatJet_msoftdrop]

(no overlap with 2 leptons , AK8)

AK8 with leading p_t : top tagging score < 0.9

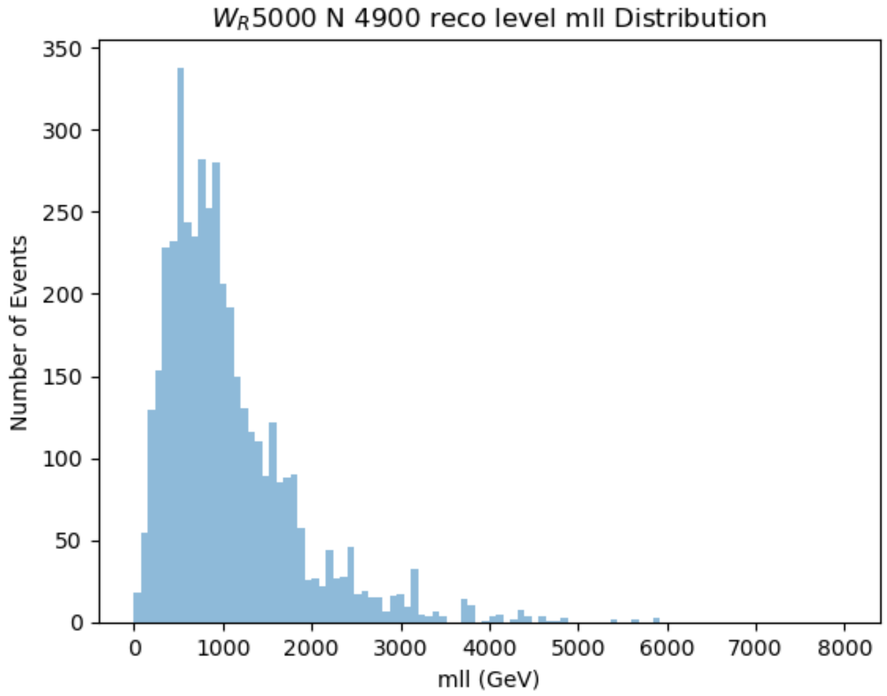
(no overlap with 2 leptons , top tagged AK8 , AK8)



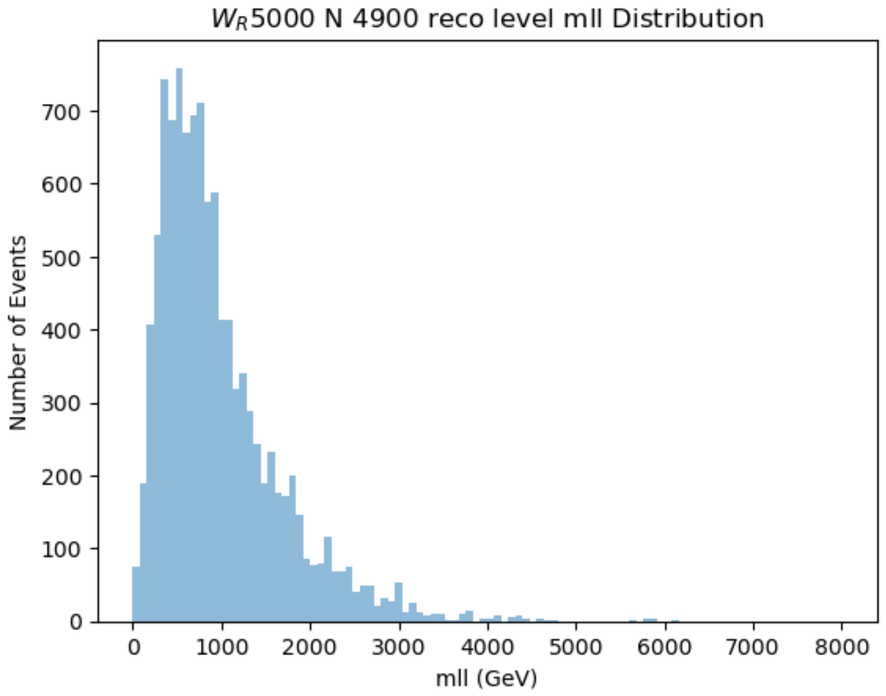
* 40,000 events , 26.9% efficiency

Backups

W_R 5000, N 4900 m(ll) distribution

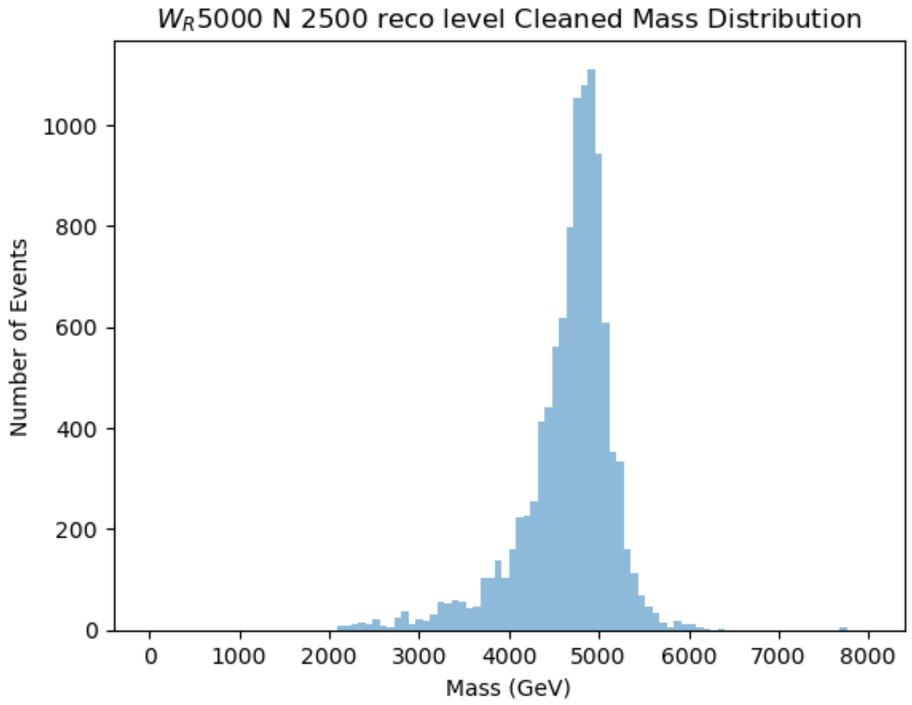


AK4 + AK8 + 2 leptons selection

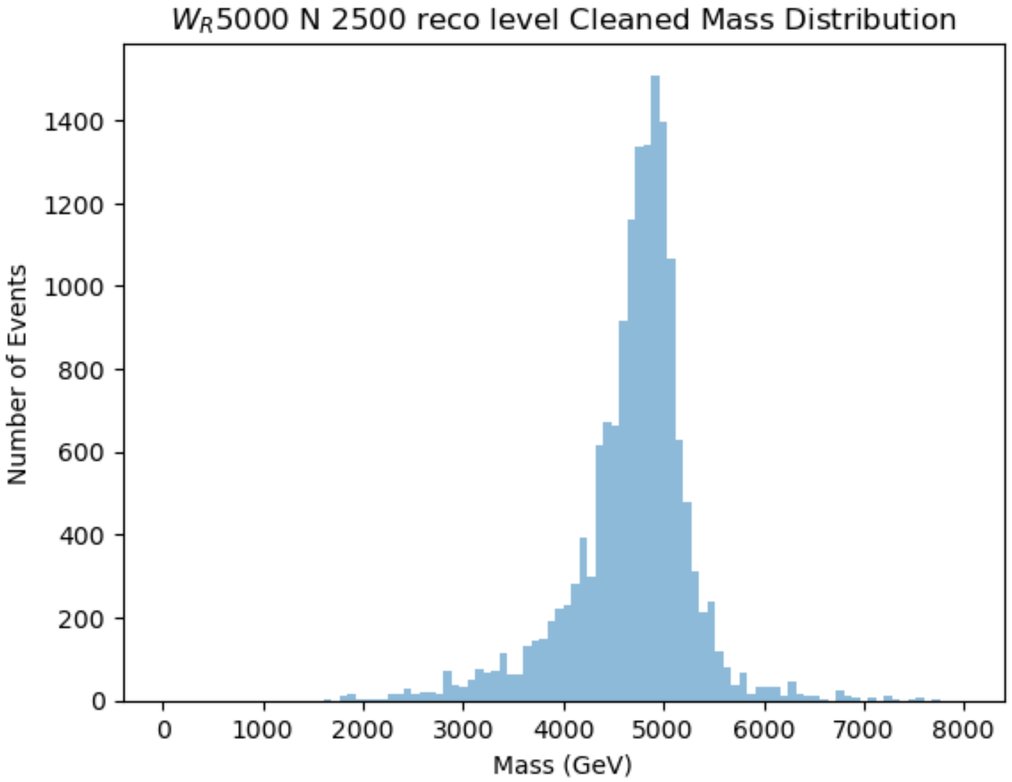


2 AK8 + 2 lepton selection

W_R 5000, N 2500 W_R reco mass distribution

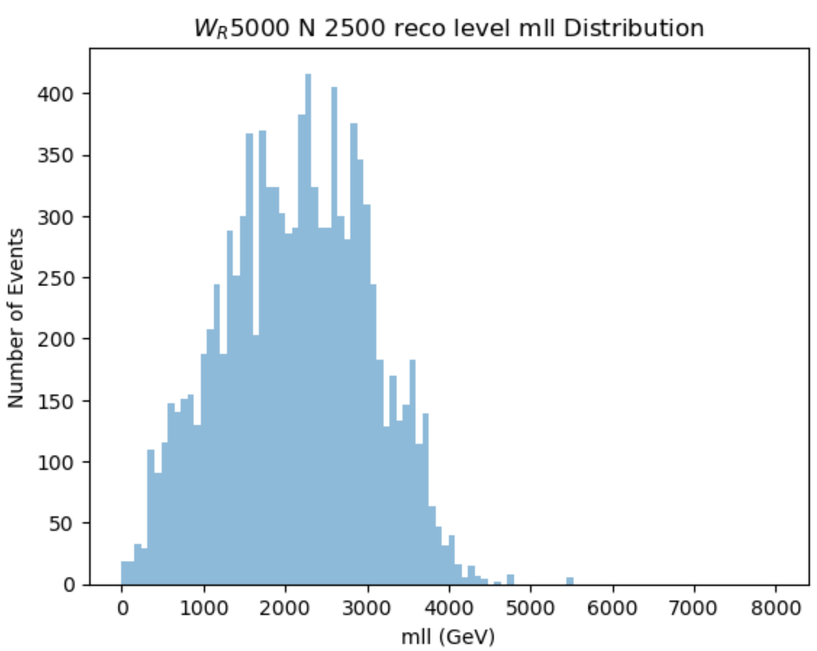


AK4 + AK8 + 2 leptons selection
efficiency : 18.74%

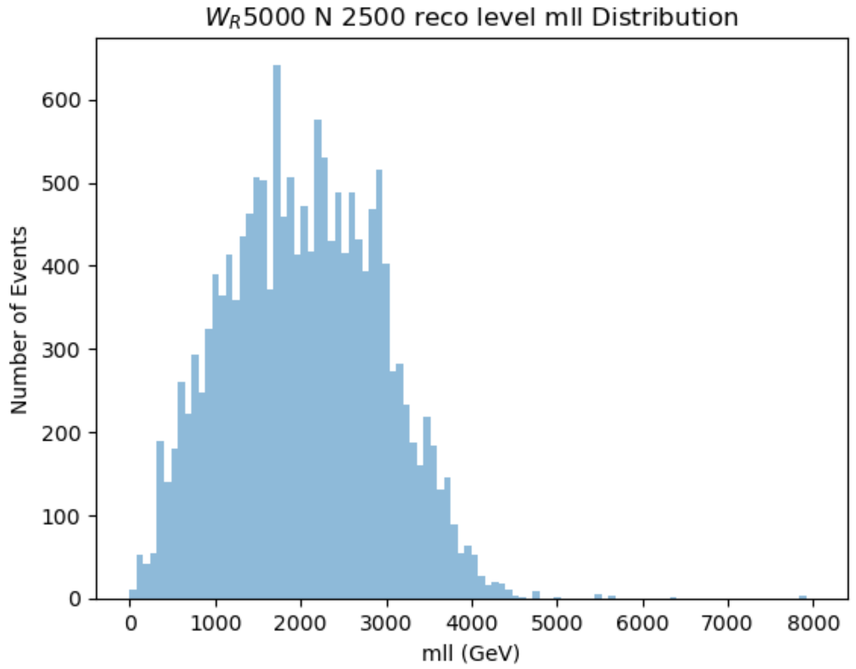


2 AK8 + 2 lepton selection
efficiency : 28.23%

W_R 5000, N 2500 m(ll) distribution

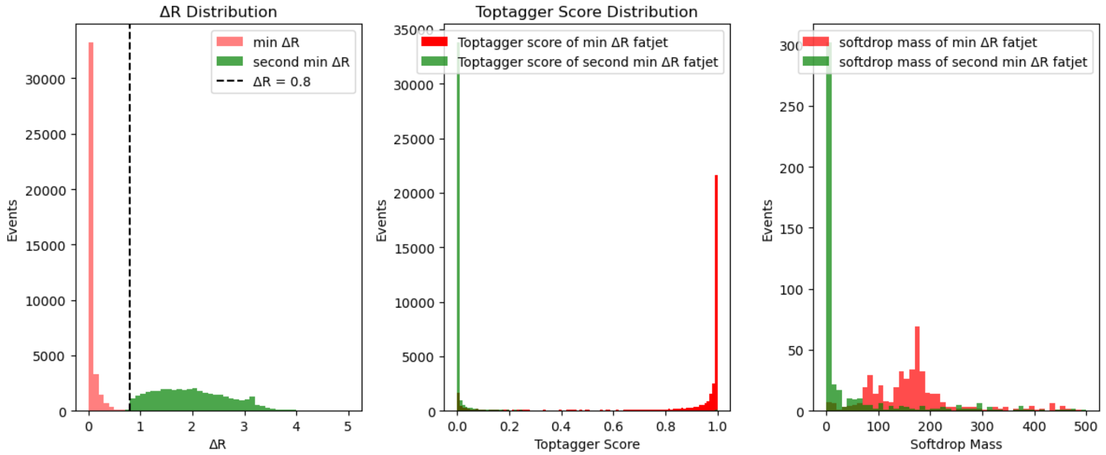


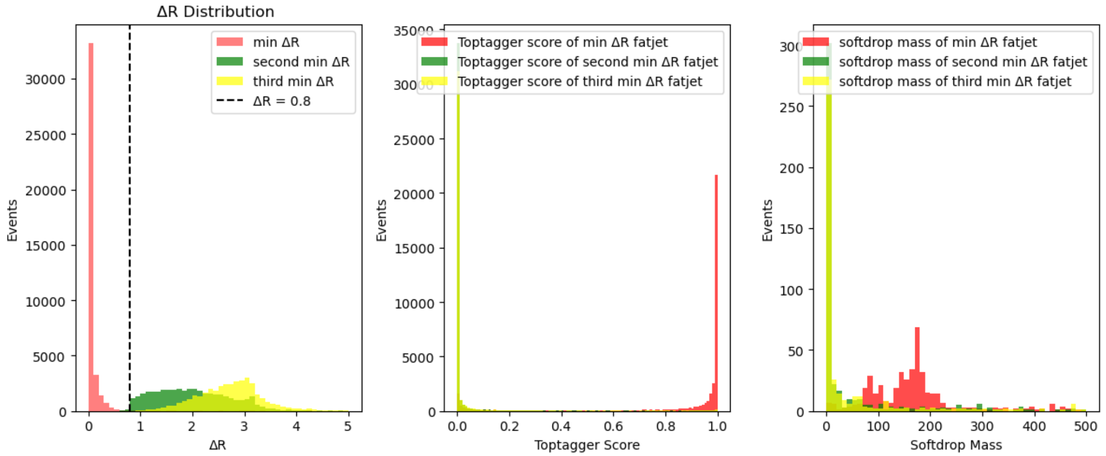
AK4 + AK8 + 2 leptons selection



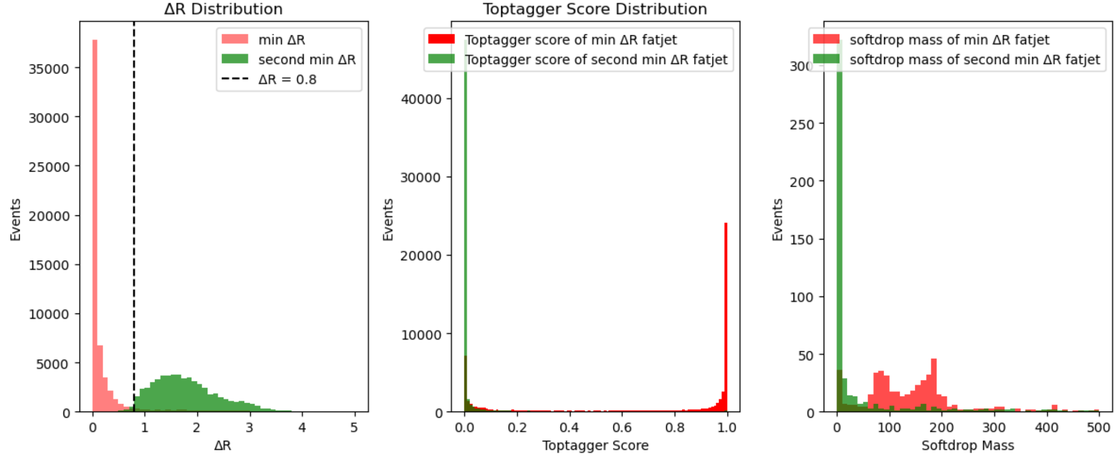
2 AK8 + 2 lepton selection

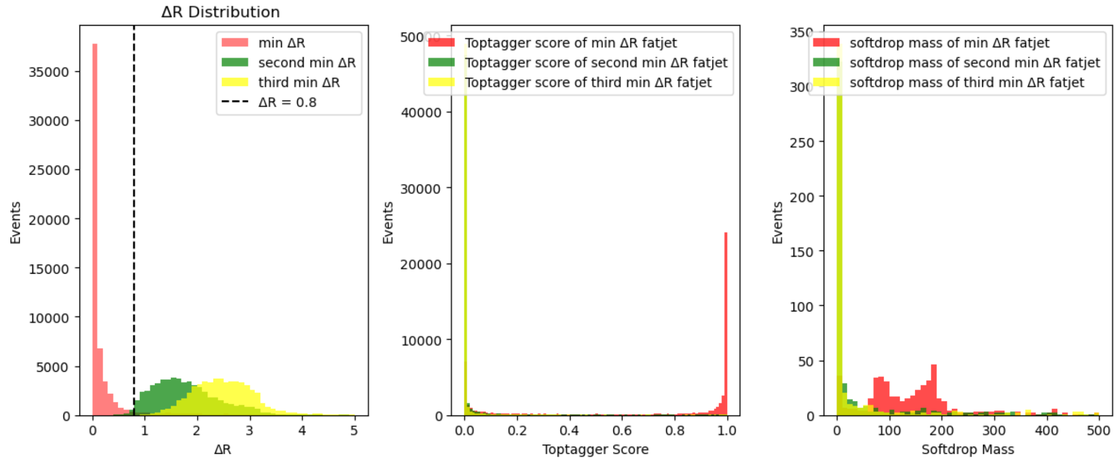
5000 4900





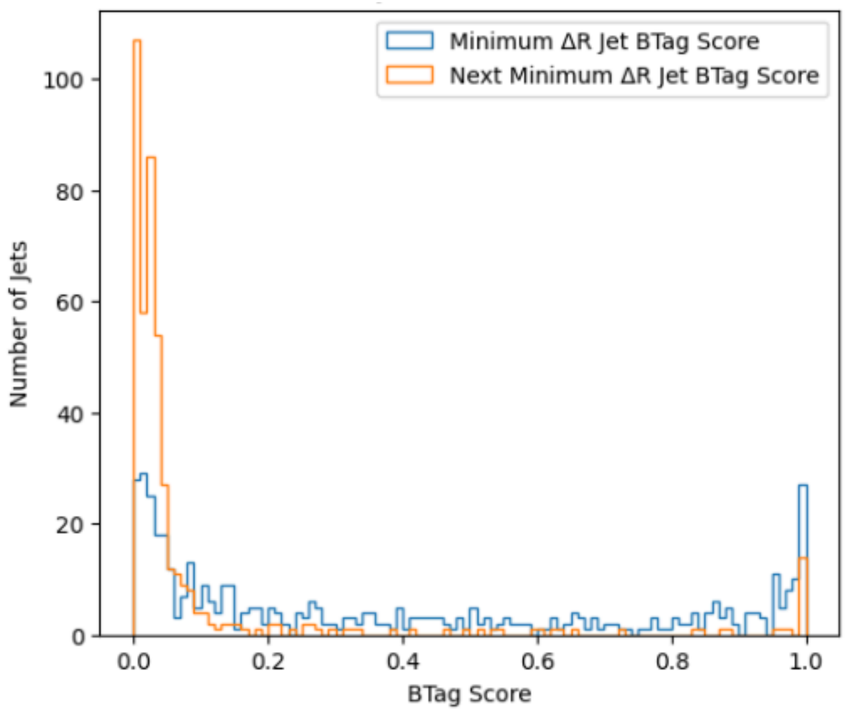
2500



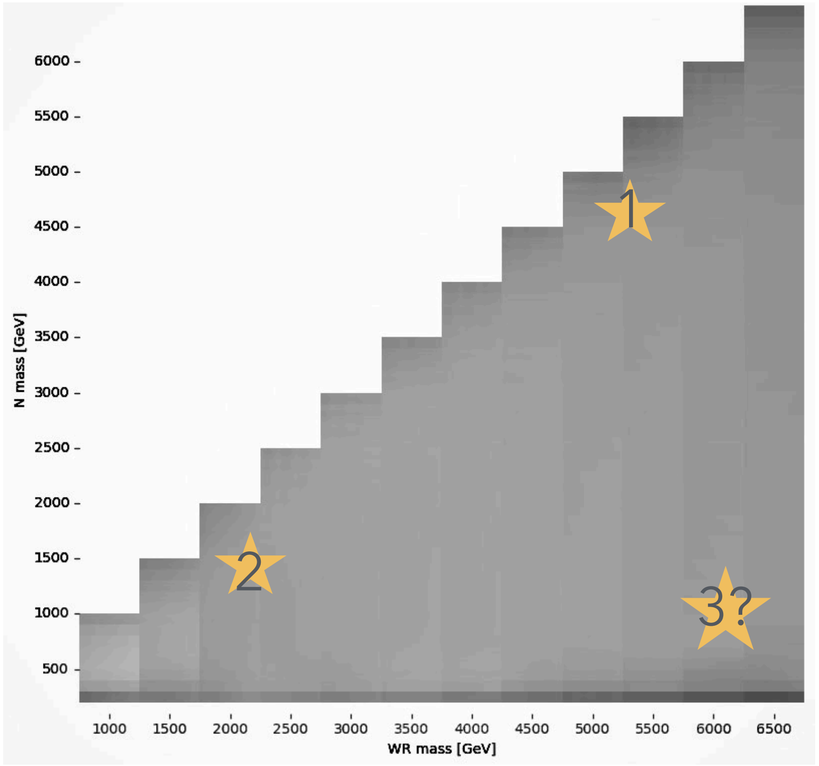


Signal B jet tagging score

B tag scores of AK4 jets from the most closest LHE b quark (from W_R^*) .



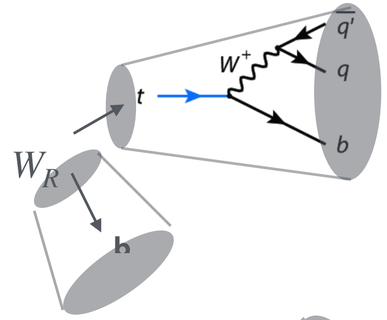
Subtarget Topology in Mass W_R~ N

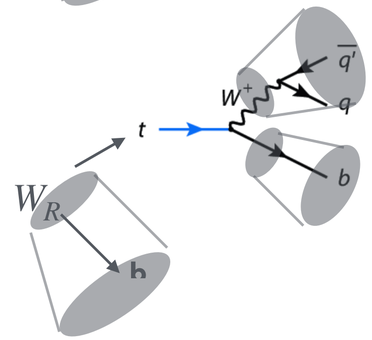


- Main target : W_R ~ N

1. High mass W_R
Jets are boosted which can be inside one jet

2. Low mass W_R
Jets are separated by two jets,





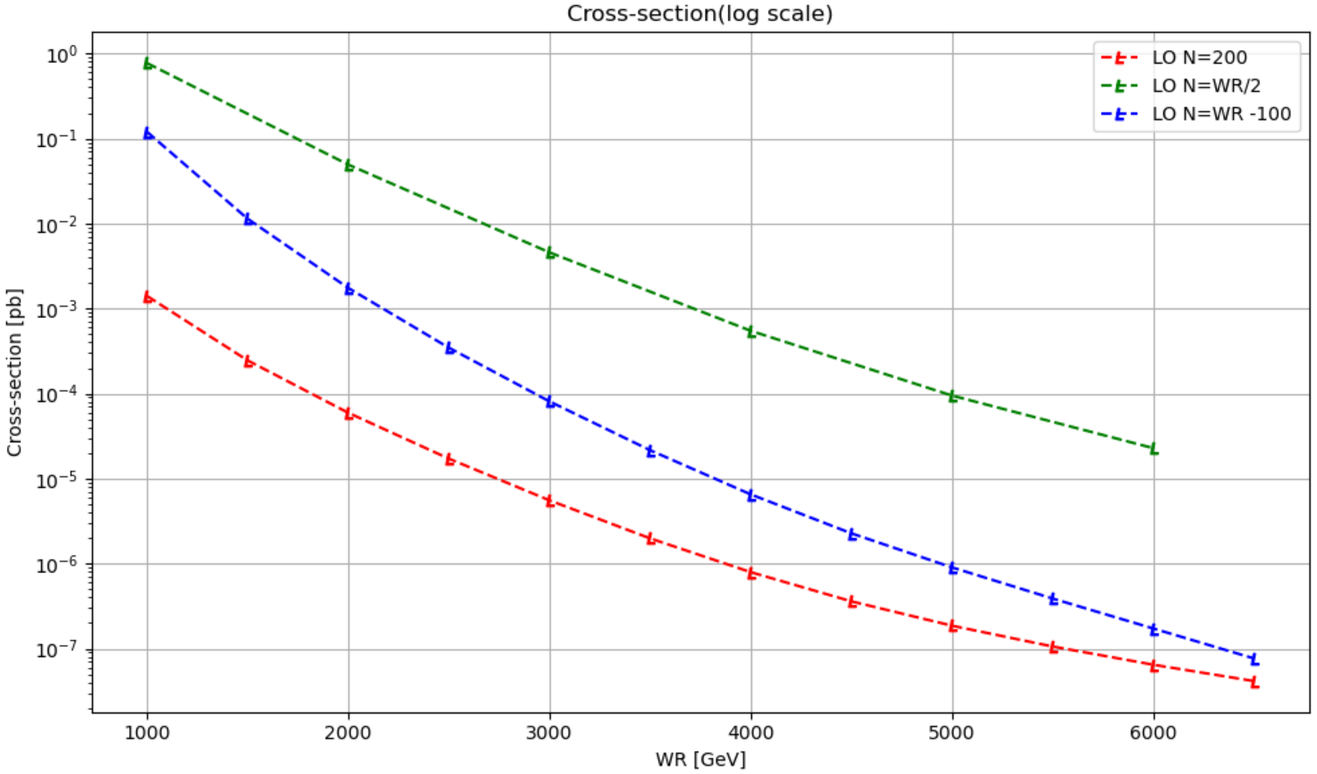
Sub-target : High W_R low N

- Onshell W_R is not useful : boosted

- Offshell W_R can be useful..? : Low mass W_R produced , similar to 2 topology.
& low pdf variation

Cross sections checking

Structure draft



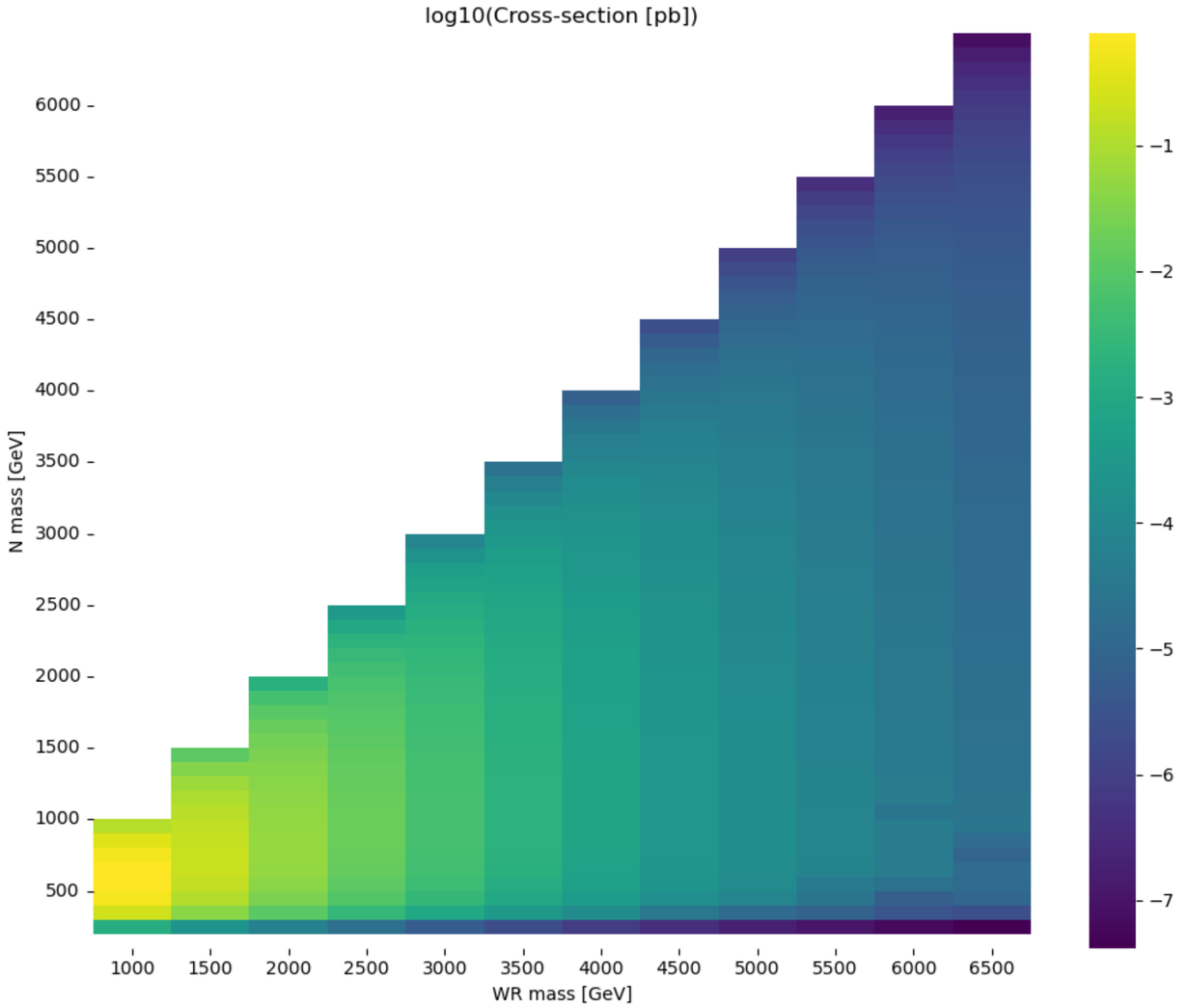
- Checked cross section with mad graph
  (v.2.9.18 20,000 run)

  - Due to phase space (top ~ 173GeV) cross section is constrained

  - N phase space makes N=WR/2 > N = WR-100

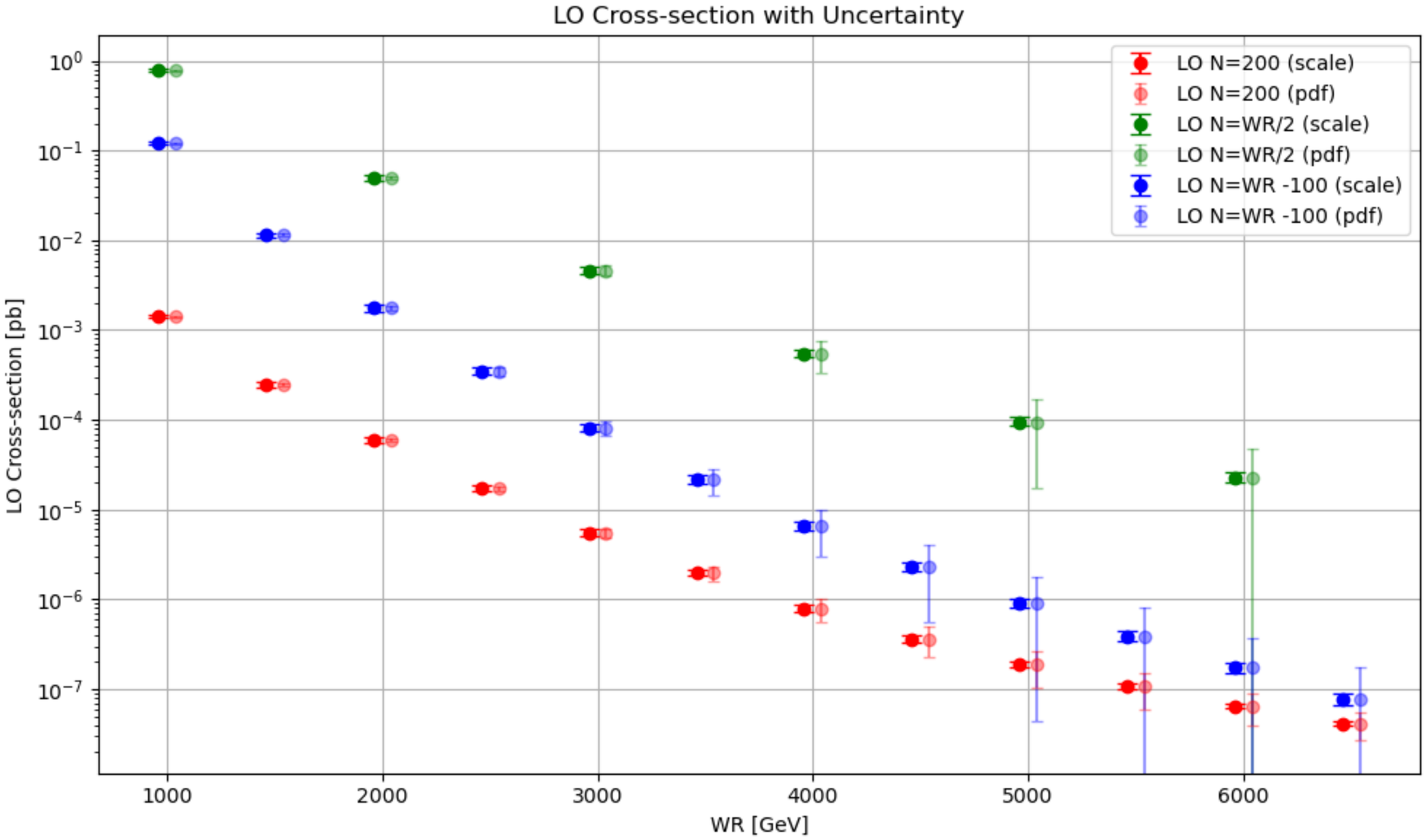
Cross Sections Checking

Full cross section

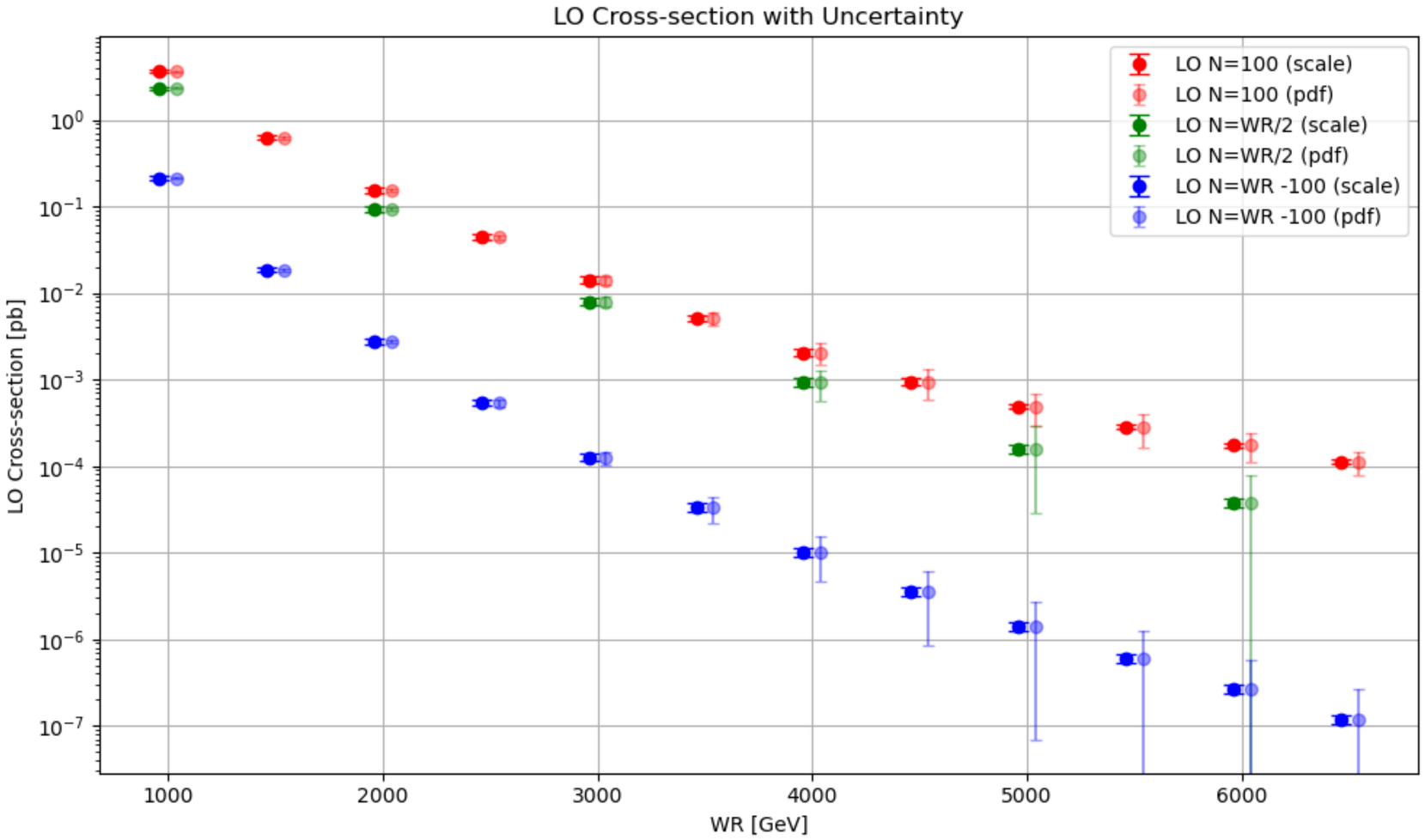


- W_R fixed & N increase
  Cross section increases -> decrease
  : top quark phase space constraint ->
  N phase space constraint -> ..

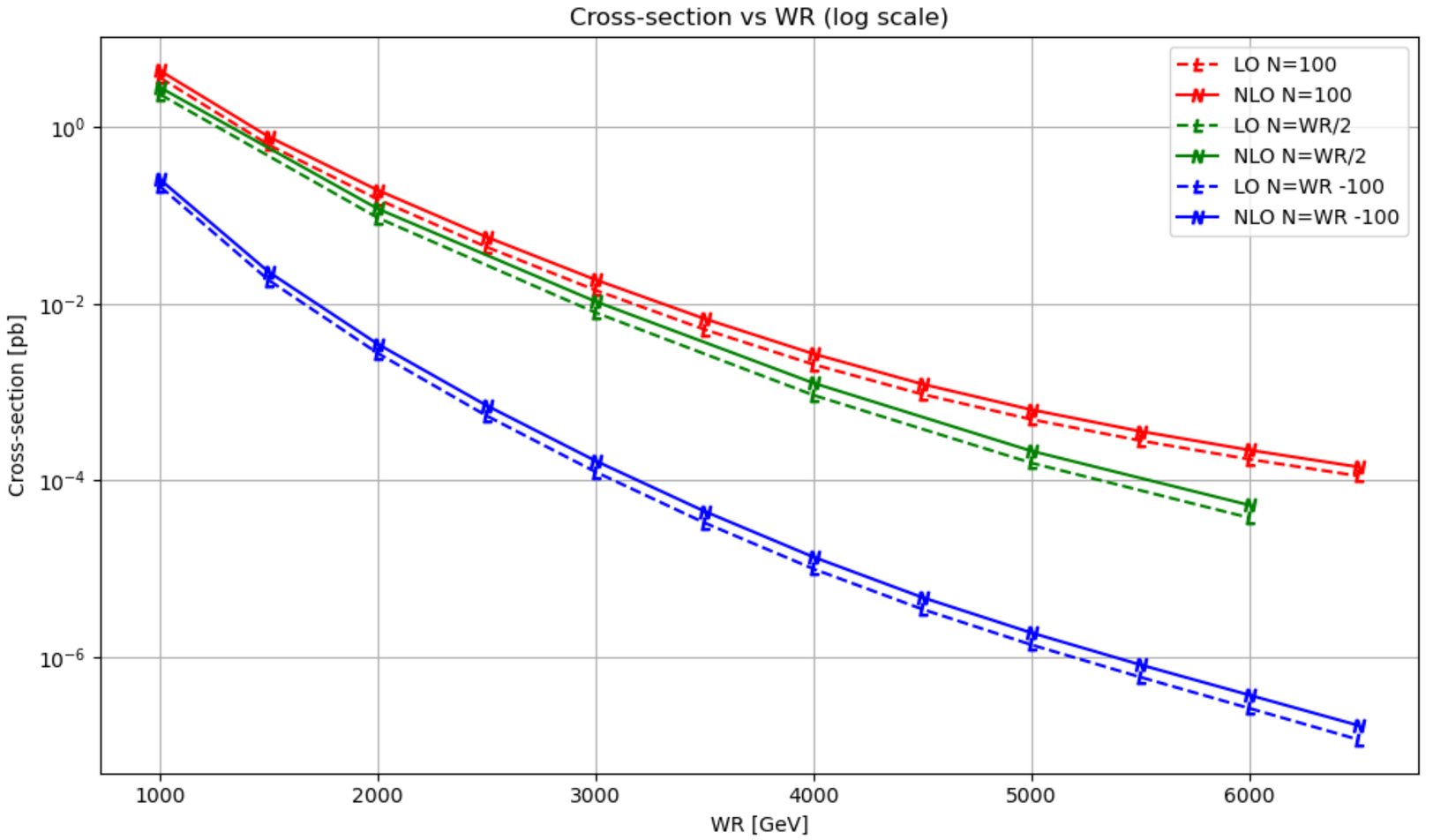
Pdf & scale variation for top channel



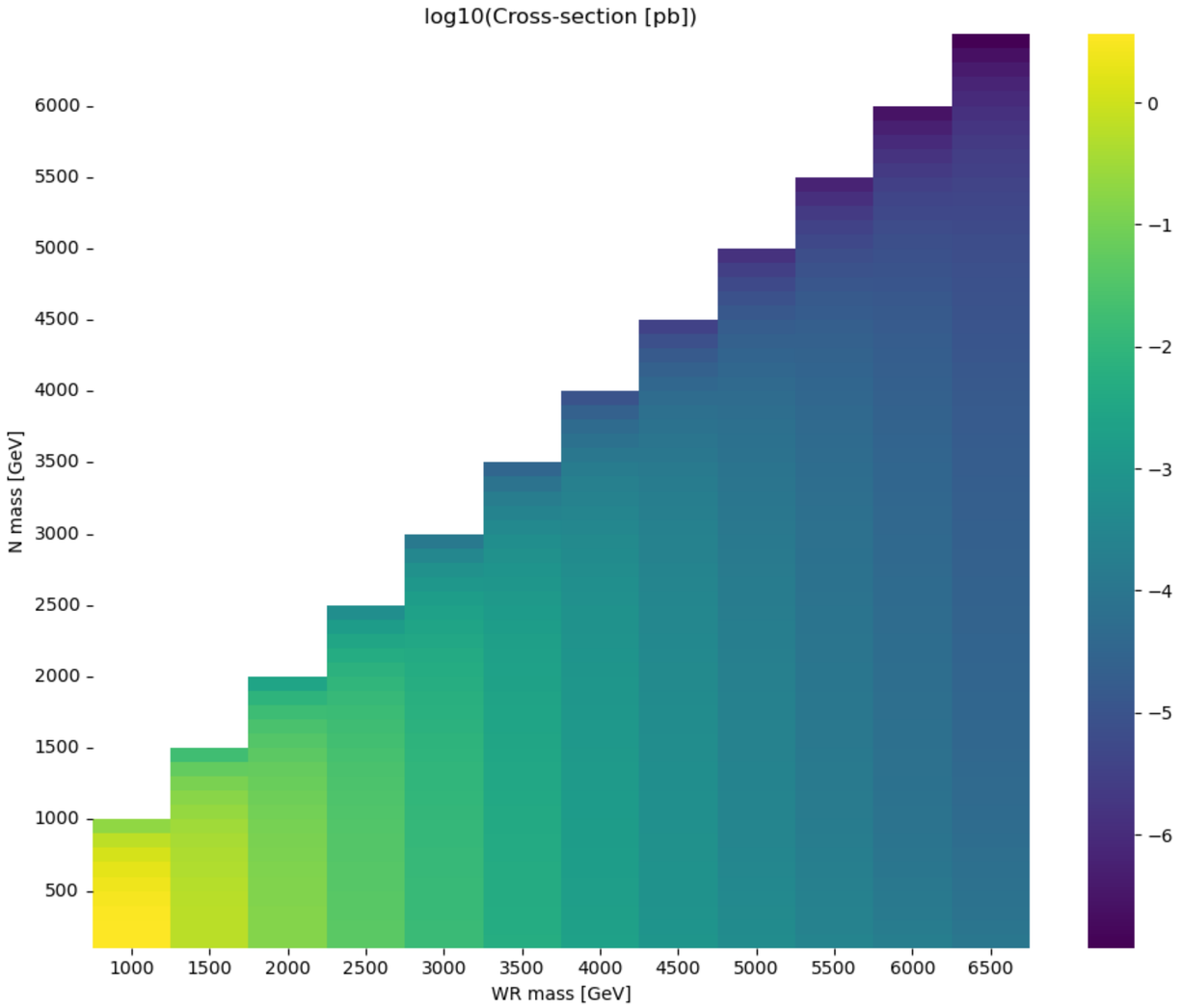
Pdf & scale variation for tau channel



Cross section for tau (LO & NLO)



Full cross section for tau



Thanks!